

March 19, 2003

Mr. J. Scott Peterson
Crown Technology, Inc.
7513 East 96th Street
Indianapolis, Indiana 46256

Dear Mr. Peterson:

Re: Exempt Construction and Operation Status,
097-12795-00128

The application from Crown Technology, Inc., received on October 19, 2000, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-1.1-3, it has been determined that the following mixing and packaging operations of industrial inorganic chemicals, to be located at 7513 East 96th Street, Indianapolis, Indiana 46256, is classified as exempt from air pollution permit requirements:

- (a) Ferrous sulfate heptahydrate operations, constructed in 1998, identified as FSH, with a maximum capacity of 13,800 pounds per hour (lbs/hr) of moist ferrous sulfate, using a Jetpulse Baghouse, identified as BH1, with a rated control efficiency of 99.9 percent (%), and exhausting to stack 001.
- (b) One (1) pre-drying natural gas burner, constructed in 1998, identified as FSM-S1, with a maximum heat input capacity of one (1) million Btu per hour (MMBtu/hr), using a jet baghouse, identified as BH2, with control efficiency of 99.9 percent (%), and exhausting to stack 002.
- (c) One (1) flash dryer, constructed in 1995, receiving heated air from a natural gas burner, identified as FSM-S2, with a maximum heat input capacity of 2.2 million Btu per hour (MMBtu/hr), using a Jetpulse Baghouse, identified as BH3, with control efficiency of 99.9 percent (%), and exhausting to stack 003.
- (d) Packaging operations, constructed in 1998, identified as PKG, with a maximum process weight of 16,000 pounds per hour (lbs/hr) of ferrous sulfate heptahydrate, using a baghouse, identified as BH4, with a control efficiency of 99.9 %, and exhausting to stack 004.
- (e) Nine (9) mixing tanks, identified as M1-M8 and M11, where various proprietary products are mixed, with a combined maximum capacity of 55 gallons per hour (gal/hr) of products, and exhausting to stack 00A.
- (f) Twenty-eight (28) storage tanks, storing finished products and raw materials, identified as 12-40, with a combined maximum capacity of 0.512 cubic meters (m³).

The following conditions shall be applicable:

- (a) Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following:
 - (1) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

**Indiana Department of Environmental Management
Office of Air Quality
and
City of Indianapolis
Office of Environmental Services**

Technical Support Document (TSD) for an Exemption

Source Background and Description

Source Name: Crown Technology, Inc.
Source Location: 7513 East 96th Street, Indianapolis, Indiana 46256
County: Marion
SIC Code: 2819
Operation Permit No.: 097-12795-00128
Permit Reviewer: Angelique Oliger

The Office of Environmental Services (OES) has reviewed an application from Crown Technology, Inc. relating to the mixing and packaging operations of industrial inorganic chemicals.

Permitted Emission Units and Pollution Control Equipment

The source consists of the following permitted emission units and pollution control devices:

- (a) Ferrous sulfate heptahydrate operations, constructed in 1998, identified as FSH, with a maximum capacity of 13,800 pounds per hour (lbs/hr) of moist ferrous sulfate, using a Jetpulse Baghouse, identified as BH1, with a rated control efficiency of 99.9 percent (%), and exhausting to stack 001.
- (b) One (1) pre-drying natural gas burner, constructed in 1998, identified as FSM-S1, with a maximum heat input capacity of one (1) million Btu per hour (MMBtu/hr), using a jet baghouse, identified as BH2, with control efficiency of 99.9 percent (%), and exhausting to stack 002.
- (c) One (1) flash dryer, constructed in 1995, receiving heated air from a natural gas burner, identified as FSM-S2, with a maximum heat input capacity of 2.2 million Btu per hour (MMBtu/hr), using a Jetpulse Baghouse, identified as BH3, with control efficiency of 99.9 percent (%), and exhausting to stack 003.
- (d) Packaging operations, constructed in 1998, identified as PKG, with a maximum process weight of 16,000 pounds per hour (lbs/hr) of ferrous sulfate heptahydrate, using a baghouse, identified as BH4, with a control efficiency of 99.9 %, and exhausting to stack 004.
- (e) Nine (9) mixing tanks, identified as M1-M8 and M11, where various proprietary products are mixed, with a combined maximum capacity of 55 gallons per hour (gal/hr) of products, and exhausting to stack 00A.
- (f) Twenty-eight (28) storage tanks, storing finished products and raw materials, identified as

12-40, with a combined maximum capacity of 0.512 cubic meters (m³).

Unpermitted Emission Units and Pollution Control Equipment

There are no unpermitted facilities operating at this source during this review process.

Existing Approvals

The source has been operating under previous approvals including, but not limited to, the following:

- (a) OP 0128-01, issued on April 27, 1995;
- (b) CP 9500128-01, issued on November 6, 1995.

All conditions from previous approvals were incorporated into this permit.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	For rectangular stack, length and width (feet)	Flow Rate (acfm)	Temperature (°F)
001	FSH	31	1.5	–	8400	200
002	FSH-S1	12	–	7 x 1.6	5000	200
003	FSH-S2	12	2.0	–	10000	200
004	PKG	10	–	1 x 1	4000	100
005	MIXG	–	–	–	–	100
006	STOR	–	–	–	–	100

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the operation be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

A complete application for the purposes of this review was received on October 19, 2000.

Emission Calculations

See Appendix A (five pages) of this document for detailed emissions calculations.

Potential To Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation

is enforceable by the U. S. EPA, the department, or the appropriate local air pollution control agency.”

Pollutant	Potential To Emit (tons/year)
PM	2.741
PM-10	2.741
SO ₂	0.01
VOC	2.528
CO	0.3
NO _x	1.4

HAP's	Potential To Emit (tons/year)
Diethanolamine	0.0255
Benzyl Chloride	1.9233
Ethylene Glycol	0.0200
TOTAL	1.969

- (c) Fugitive Emissions
 Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

Actual Emissions

No previous emission data has been received from the source.

County Attainment Status

The source is located in Marion County.

Pollutant	Status
PM-10	attainment
SO ₂	maintenance attainment
NO ₂	attainment
Ozone	maintenance attainment
CO	attainment
Lead	unclassifiable

- (a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Marion County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (b) Marion County has been classified as attainment or unclassifiable for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (c) Fugitive Emissions
 Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2, 40 CFR 52.21, or 326 IAC 2-3 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate

matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

Source Status

Existing Source PSD, Part 70 or FESOP Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	2.741
PM10	2.741
SO ₂	0.01
VOC	2.528
CO	0.3
NO _x	1.4
Single HAP	1.9233
Combination HAPs	1.969

- (a) This existing source is not a major stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not in one of the 28 listed source categories.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source, including the emissions from this exemption 097-12795-00128, is still not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

- (a) each criteria pollutant is less than 100 tons per year,
- (b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
- (c) any combination of HAPs is less than 25 tons/year.

This status is based on all the air approvals issued to the source. This status has been verified by the OES inspector assigned to the source.

Federal Rule Applicability

- (a) There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this source. This source is not subject to the New Source Performance Standard, 326 IAC 12, 40 CFR 60, Subpart Kb, because the storage vessels have capacities of less than forty (40) cubic meter (m³).
- (b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14 and 40 CFR Part 63) applicable to this source.

State Rule Applicability - Entire Source

326 IAC 1-6 (Preventive Maintenance Plan)

This source is not subject to 326 IAC 1-6, because it is not required to obtain a permit under 326 IAC 2.

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants)

This source is not subject to 326 IAC 2-4.1, because it is not a major source of hazardous air pollutants, as defined in 40 CFR 63.

326 IAC 2-6 (Emission Reporting)

This source is located in Marion County and its potential to emit any regulated pollutant is less than ten (10) tons per year. Therefore, 326 IAC 2-6 does not apply.

326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of thirty percent (30%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 6-1-2 (Particulate Emissions Limitations)

This rule does not apply to this source because the potential to emit of particulate is less than one hundred (100) tons per year and it is not a specifically listed source in 326 IAC 6.

326 IAC 6-3-2 (Process Operations)

Interpolation of the data for all particulate emitting units shall be accomplished by use of the equation for the process weight rate up to sixty thousand (60,000) pounds per hour:

$$E = 4.10 P^{0.67}$$

where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

Particulate emissions shall not exceed 14.9 pounds per hour for FSH, and baghouse BH1 shall be in operation any time that FSH is in operation in order to comply with this limit. Particulate emissions shall not exceed 3.09 pounds per hour for FSM-S1, and baghouse BH2 shall be in operation any time that FSM-S1 is in operation in order to comply with this limit. Particulate emissions shall not exceed 1.66 pounds per hour for FSM-S2, and baghouse BH3 shall be in operation any time that FSM-S2 is in operation in order to comply with this limit. Particulate emissions shall not exceed 1.66 pounds per hour for PKG, and baghouse BH3 shall be in operation any time that PKG is in operation in order to comply with this limit. For detailed calculations, see appendix A pages one and two.

326 IAC 7-1 (Sulfur Dioxide Emission Limitations)

This rule does not apply to this source because the potential to emit of each individual unit is less than 25 tons per year or 10 pounds per hour of Sulfur Dioxide.

Conclusion

The operation of industrial inorganic chemicals shall be exempt from air pollution control permit requirements by exemption 097-12795-00128.

Emissions Calculation for Raw Material Transfer (FSH)

*The maximum amount of raw material handled is 13,800 pounds per hour.

*The emission factor is 0.00021 lbs PM per ton raw material (Crushed Stone Processing Operations SSC 3-05-020-32).

Potential Emission Calculations

$$13,800 \text{ lbs raw material / hr} * 0.00021 \text{ lbs particulate / 2000 lbs raw material} * 1 \text{ ton / } 2000 \text{ lbs} * 8760 \text{ hrs / yr} = \mathbf{0.006 \text{ tons PM per year}}$$

Allowable Emission Calculations

$$E = 4.1 * (13,800/2000)^{0.67} = \mathbf{14.9 \text{ tons PM per year}}$$

Emissions Calculation for Grinding and Drying Operations (FSH)

*The maximum amount of raw material handled is 13,800 pounds per hour.

*The emission factor is 10.427 lbs PM per ton raw material (Crushed Stone Processing Operations SSC 3-05-020-32).

*The baghouse control efficiency is 99.9%.

Potential Emission Calculations

$$13,800 \text{ lbs raw material / hr} * 10.427 \text{ lbs particulate / 2000 lbs raw material} * 1 \text{ ton / } 2000 \text{ lbs} * 8760 \text{ hrs / yr} * (1 - 99.9/1000) = \mathbf{0.315 \text{ tons PM per year}}$$

Allowable Emission Calculations

$$E = 4.1 * (13,800/2000)^{0.67} = \mathbf{14.9 \text{ tons PM per year}}$$

Emissions Calculation for pre-drying (FSM-S1)

*The maximum process rate is 1,312.5 pounds ferrous sulfate heptahydrate per hour.

*The emission factor is 724.64 lbs PM per ton material (Crushed Stone Processing Operations SSC 3-05-020-32).

*The baghouse control efficiency is 99.9%.

Potential Emission Calculations

$$1,312.5 \text{ lbs / hr} * 724.64 \text{ lbs PM / 2000 lbs raw material} * 1 \text{ ton / } 2000 \text{ lbs} * 8760 \text{ hrs / yr} * (1 - 99.9/1000) = \mathbf{2.08 \text{ tons PM per year}}$$

Allowable Emission Calculations

$$E = 4.1 * (1312.5/2000)^{0.67} = \mathbf{3.09 \text{ tons PM per year}}$$

Emissions Calculation for flash drying (FSM-S2)

*The maximum process rate is 517.5 pounds of ferrous sulfate heptahydrate per hour.

*The emission factor is 66.73 lbs PM per ton raw material (Crushed Stone Processing Operations SSC 3-05-020-32).

*The baghouse control efficiency is 99.9%.

Potential Emission Calculations

$$517.5 \text{ lbs / hr} * 66.73 \text{ lbs PM / 2000 lbs raw material} * 1 \text{ ton / 2000 lbs} \\ * 8760 \text{ hrs / yr} * (1 - 99.9/1000) = \mathbf{0.07 \text{ tons PM per year}}$$

Allowable Emission Calculations

$$E = 4.1 * (517.5/2000)^{0.67} = \mathbf{1.66 \text{ tons PM per year}}$$

Emissions Calculation for Packaging Operations (PKG)

*The maximum process rate is 517.5 pounds per hour.

*The emission factor is 66.73 lbs PM per ton raw material (Gray Iron Foundries SCC 3-04-003-50).

*The baghouse control efficiency is 99.9%.

Potential Emission Calculations

$$517.5 \text{ lbs material / hr} * 66.73 \text{ lbs PM / 2000 lbs raw material} * 1 \text{ ton / 2000 lbs} \\ * 8760 \text{ hrs / yr} * (1 - 99.9/1000) = \mathbf{0.07 \text{ tons PM per year}}$$

Allowable Emission Calculations

$$E = 4.1 * (517.5/2000)^{0.67} = \mathbf{1.66 \text{ tons PM per year}}$$

Appendix A: Emission Calculations
Natural Gas Combustion Only
MM Btu/hr 0.3 - < 10

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Company Name: Crown Technology, Inc.
Address City IN Zip: 7513 East 96th Street, Indianapolis, Indiana 46256
Exemption: 097-12795-00128
Reviewer: Angelique Oligier
Date: 19-Mar-03

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

3.2

28.0

Pollutant

	PM	PM10	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	13.7	13.7	0.6	100.0	5.3	21.0
Potential Emission in tons/yr	0.2	0.2	0.01	1.4	0.1	0.3

Methodology

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Emission Factors for NOx: uncontrolled = 100, Low Nox Burner = 17, Flue gas recirculation = 36

Emission Factors for CO: uncontrolled = 21, Low NOx Burner = 27, Flue gas recirculation = ND

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-03-006-03

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

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**Appendix A: Emission Calculations
VOC Calculations
from Mixing Operations**

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Company Name: Crown Technology, Inc.
Address City IN Zip: 7513 East 96th Street, Indianapolis, Indiana 46256
Exemption: 097-12795-00128
Reviewer: Angelique Oliger
Date: 14-Mar-03

Tank No.	Raw Material Component	Density of Component (lbs/gal)	Pounds of Component per Batch	Gallons Component per Batch (1)	Maximum Batches per year	VOC content (lb/gal)	Maximum VOC per Batch lbs (2)	Emission Factor	Maximum VOC Emissions per batch pounds (3)	Maximum Annual VOC Emissions tons (4)
1	10% Silicone Emulsion	8.16	898	110.04902		0.05	5.502451			
	ANTAROX B-225	8.21	451.3	54.969549		0.04	2.198782			
	Isopropanol	6.55	50	7.6335878		6.55	50			
	Total				34.756		57.70123	3.40%	1.96184192	0.03409289
2	10% Silicone Emulsion	8.16	898	110.04902		0.05	5.502451			
	Isopropanol	6.55	50	7.6335878		6.55	50			
	Total				51.006		55.50245	3.40%	1.88708333	0.04812629
3 & 4	HCL Acid 20%	9.67	200	20.682523		0	0			
	Triethanoamine 99	9.34	2054.8	220		0.03	6.6			
	Zonyl	8.84	50	5.6561086		2.65	14.98869			
	Total				73.07		21.58869	3.40%	0.73401538	0.02681725
5	Miranol	9.42	200	21.231423		0.24	5.095541			
	Igepal	8.84	400	45.248869		0.04	1.809955			
	Total				90.252		6.905496	3.40%	0.23478687	0.01059499
6, 7, & 8	HCL Acid 20%	9.67	2600	268.8728		0	0			
	Zonyl	8.84	50	5.6561086		2.65	14.98869			
	Total				254.982		14.98869	3.40%	0.50961538	0.06497138
11	Benzyl Chloride	9.17	1455	158.66957		9.17	1455			
	Glyoxal	9.34	500	53.533191		4.2	224.8394			
	Ethyleneamine E-100	8.84	1500	169.68326		0	0			
	Total				78.543		1679.839	3.40%	57.1145396	2.24297364

TOTAL 2.428

(1) Gallons component per batch = pounds component per batch / density of component

(2) Maximum VOC per batch (lbs) = gallons component per batch * VOC content

(3) Maximum VOC emissions per batch = emissions factor * total maximum VOC per batch

(4) Maximum annual VOC emissions = maximum VOC emissions per batch * maximum batches per year * 1 ton / 2000 lbs

**Appendix A: Emission Calculations
HAPs Calculations
from Mixing Operations**

Page 5 of 5 TSD App A

Company Name: Crown Technology, Inc.
Address City IN Zip: 7513 East 96th Street, Indianapolis, Indiana 46256
Exemption: 097-12795-00128
Reviewer: Angelique Oligier
Date: 19-Mar-03

Tank No.	Raw Material Component	Pounds of Component per Batch	Maximum Batches per year	Diethanolamine Wt %	tons emitted	benzyl chloride wt %	tons emitted	Ethylene Glycol wt %	tons emitted (1)
3 & 4	HCL Acid 20%	200							
	Triethanoamine 99	2054.8		1%	0.02552				
	Zonyl	50							
			73.07						
5	Miranol	200							
	Igepal	400							
			90.252						
11	Benzyl Chloride	1455				99%	1.923333		
	Glyoxal	500							
	Ethyleneamine E-100	1500						1%	0.020028
			78.543						
			Totals		0.02552		1.923333		0.020028
Total									1.968886

(1) Tons emitted = pounds of component per batch * maximum batches per year * % HAP * emissions factor (3.4%) * 1 ton / 2000 pounds